

RULE 466.1

Valves And Flanges

(a) Definitions

For the purpose of this rule:

- (1) A Valve is defined as any device that regulates the flow of fluid in a piping system by means of an external actuator acting to permit or block passage of fluid including the attached flange and the flange seal.
- (2) A Flange is defined as a projecting rim on a pipe or piping component used to attach it to another piping detail.
- (3) Reactive Organic Compound means any chemical compound which contains the element carbon, which has a Reid vapor pressure (RVP) greater than 80 mm Hg (1.55 pounds per square inch), or an absolute vapor pressure (AVP) greater than 36 mm Hg (0.7 psi) at 20°C excluding carbon monoxide, carbon dioxide, carbonic acid, carbonates and metallic carbides and excluding methane, 1,1,1,-trichloroethane, methylene chloride, trifluoromethane, and chlorinated-fluorinated hydrocarbons.
- (4) A Working Day is any day of the week except Saturday or Sunday or employee holiday.
- (5) A Refinery is an establishment that processes petroleum as defined in Standard Industrial Classification Manual as Industry No. 2911, Petroleum Refining.
- (6) A Chemical Plant is any plant producing organic chemicals and/or manufacturing products by organic chemical processes.
- (7) Oil Production Field means those properties on which crude petroleum and natural gas production as defined in the Standard Industrial Classification Manual as Industry No. 1311, Crude Petroleum and Natural Gas is conducted.
- (8) Commercial Natural Gas is a mixture of gaseous hydrocarbons, chiefly methane, of pipeline quality such as that obtained from a company licensed to dispense such gases.
- (9) Background is defined as the ambient concentration of reactive organic compounds determined at least three (3) meters upwind from the valve or flange to be inspected.

- (10) Liquid Leak is defined as:
- (A) the dripping of liquid reactive organic compounds at a rate of more than three drops per minute; or
 - (B) a visible liquid mist.
- (11) A Gaseous Leak is defined as the detection of gaseous reactive organic compounds in excess of 10,000 ppm above background when measured at a distance of 1 centimeter from the source with a portable hydrocarbon detection instrument.

(b) **Applicability**

(1) Liquid leaks

The provisions of this rule prohibiting liquid leaks are applicable to valves and flanges in reactive organic compound service.

(2) Gaseous leaks

The provisions of this rule requiring periodic inspection with a portable leak detection device and subsequent repair of valves and flanges in reactive organic compound service are applicable to petroleum refineries, chemical plants, and oil production fields.

(c) **Requirements - Liquid Leak Control**

A person shall not use valves or flanges in reactive organic compound service unless such valves and flanges are maintained so that there shall not be, during operation or during non-operation, a leakage of more than three drops per minute nor a visible liquid mist.

(d) **Requirements - Gaseous Leak Control**

- (1) The operator of a refinery, chemical plant, or oil production field is subject to the provisions of this paragraph and is responsible for performing the required inspections. Each operator shall, no later than 90 days after the date of adoption of this rule, submit a management plan detailing the valve inspection schedule for the inspection program to be conducted by the operator at the refinery, chemical plant, or oil production field.

- (2) Each valve or flange in a petroleum refinery, chemical plant, or oil production field handling reactive organic compounds shall be repaired in accordance with paragraph (e). Any such valve or flange found to leak shall be repaired in accordance with paragraph (f).
- (3) Each valve located at the end of a pipe or line containing reactive organic compounds, shall be sealed with a blind flange, plug, or cap when not in use, except:
 - (A) A valve on a product sampling line;
 - (B) A safety pressure relief valve;
 - (C) A bleeder valve in a double block and bleeder valve system.
- (4) Each valve which has been discovered to leak in accordance with the definition of paragraph (a)(11) shall be affixed with a record of inspections for the succeeding twelve-month period. Alternative methods of recordkeeping may be used, including the maintenance of records in a centralized location, provided that prior approval of the Executive Officer has been obtained.
- (5) At any refinery or chemical plant, a leak in more than one valve or flange per day, discovered by District personnel within five days after the scheduled inspection required by subsection (d)(1), shall constitute a violation of this rule if the measured reactive organic concentration exceeds 75,000 ppm measured within one centimeter of the source as hexane above background.

(e) Inspection

- (1) Valves handling reactive organic compounds shall be inspected annually for gaseous leaks with a portable leak detection device or an alternate method having the prior approval of the Executive Officer.
- (2) Process piping flanges shall be inspected annually.
- (3) In addition to the annual inspection each valve found to leak shall be reinspected after 30 days but before 90 days after repair of such leak. Valves found to be leaking after the 30-day reinspection shall be repaired and reinspected at intervals of one-half the prior interval, except no valve need be inspected more frequently than once per day.
- (4) Continuous monitoring flammable gas detection devices which send a visual or audible signal when a leak occurs, may, with the approval of the Executive Officer, be substituted for periodic inspections using leak detection equipment in applicable facilities or parts of facilities.

(f) Repair

- (1) Each valve or flange at a refinery or chemical plant shall be repaired within two working days after detection of such leak.
- (2) Until September 30, 1985, each valve or flange at an oil production field found to leak shall be repaired within fifteen working days after detection of such leak. On or after October 1, 1985, each valve or flange at an oil production field found to leak shall be repaired within five working days after detection of such leak.
- (3) If, after repairs are completed, the detectable gaseous reactive organic compounds are 10,000 ppm or greater when measured at a distance of 1 centimeter from the source, one of the following actions will be taken:
 - (A) Emergency repairs shall be made to reduce the emission rate to the rate stated in (a)(11); or
 - (B) The emissions from the leak shall be vented into an approved air pollution control device; or
 - (C) A petitioner for a variance shall be filed on the next working day.
- (4) The persons complying with the provisions of the rule shall be exempt from the provisions of Rule 430 insofar as the provisions of Rule 430 would apply to leaking valves or flanges.

(g) Measurement Requirements

- (1) The instruments used for the measurement of gaseous reactive organic compounds shall be equated to calibrating with hexane and sampling at one liter per minute.
- (2) Actual measurement of gaseous leakage rates shall be made at a distance of one centimeter from the source.

(h) Recordkeeping

Persons subject to this rule shall:

- (1) Maintain records of inspections of valves performed pursuant to paragraph (e) for one year.
 - (A) With the approval of the Executive Officer, inspection records by operational system or plant area will be adequate to demonstrate compliance with annual inspection requirements.

- (B) Annual inspection records for the continuous monitoring equipment described in subparagraph (e)(4) shall not be required, provided that records are maintained for out-of-tolerance conditions as indicated by the monitoring equipment.
- (2) Make inspection records available for the review by the Executive Officer upon request.
- (3) Recordkeeping requirements shall not apply to the routine periodic inspection flanges.

(i) Exemptions

- (1) The provisions of this rule shall not apply to:
 - (A) Valves or flanges handling gases in which commercial natural gas is the only reactive organic compound.
 - (B) All valves or flanges which are located in areas which make inspection infeasible or unsafe for personnel provided that prior concurrence of the Executive Officer has been obtained.
 - (C) Valves or flanges handling gases with a hydrogen composition of 80 percent or greater.
 - (D) Oil production field fluid media having an API gravity of 20 or less.
 - (E) Valves or flanges handling liquids or gases with a water content of 80 percent or greater.
 - (F) Valves or flanges which are tagged or logged for maintenance when within the specified repair period.
- (2) The provision of paragraph (d) of this rule shall not apply to:
 - (A) Valves or flanges incorporated in lines operating under negative pressure.
 - (B) Oil production facilities producing a total of 10 barrels per day of product or less when averaged over any 30-day period.

(j) Effective Dates

- (1) The owner or operator of any valve or flange in reactive organic compound service shall comply with the requirements of this rule no later than July 1, 1984.

- (2) The owner or operator of an oil production field shall comply with the requirements of this rule by July 1, 1984, except that the management plan specified in paragraph (d) shall be submitted 90 days after the date of adoption of this rule.
- (3) The owner or operator of a refinery or chemical plant shall comply with the requirements of this rule on the date of adoption, except the requirements of paragraph (c) shall become effective no later than July 1, 1984.

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